

# ANGULAR CONTACT BEARINGS



## ANGULAR CONTACT BEARINGS



### Angular Contact Bearing Design

Angular contact bearings have one ring shoulder removed, this may be from the inner or outer ring. This allows a larger ball complement than found in comparable deep groove bearings, giving a greater load capacity. Speed capacity of angular contact bearings is also greater than deep groove.

Barden angular contact bearings have a nominal contact angle ranging from  $10^\circ$  to  $25^\circ$ . They can be used in pre-loaded duplex sets, back to back (DB) or face to face (DF) for supporting thrust loads in both directions or in tandem (DT) for additional capacity.

Contact angles are obtained by assembling the bearings to the appropriate radial play values. The smaller contact angles give better radial capacity and rigidity while the higher contact angles give higher axial capacity and rigidity.

Angular contact bearings support thrust loads or combinations of radial and thrust loading. They can not accept radial loads alone — a thrust load of sufficient magnitude must be applied. A single angular contact bearing can be loaded in one thrust direction only, this may be an operating load or pre-load.

Separable and non-separable types are available within the category of angular contact bearings. Separable bearings are useful where bearings must be installed in blind holes or where press fits are required on the shaft and in the housing. The separable feature also permits dynamic balancing of the rotating components with the inner ring mounted in place without the outer ring and housing.

In Barden miniature and instrument angular contact bearings (types B and H), machined phenolic cages with high speed capability are standard. These cages are outer ring land guided, which allows lubricant access to the most desired point at the ring and ball contact area. Centrifugal force carries lubricant outwards during operation to reach the other areas of need.

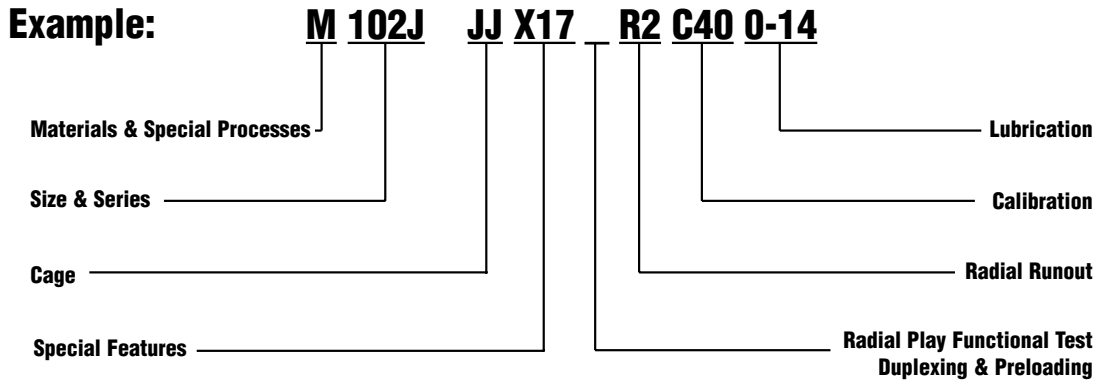
For larger spindle and turbine series B types, phenolic cages are also standard, but H types are normally supplied with bronze cages of various designs.

In separable bearings the B type cages have stepped ball pockets to retain the balls when the inner ring is removed.

Consult Barden engineering for questions regarding additional cage considerations, or refer to cage discussion in the engineering section.

# ANGULAR CONTACT BEARINGS

## Nomenclature



### Materials & Special Processes

- BC** – Barrier coating
  - P** – TCP coating
  - C** – Ceramic Balls
  - 30X** – 'X Life Ultra' rings
  - S** – AISI 440C rings and balls
  - M** – M50 rings and balls
  - T** – T5 rings and T15 balls
  - V** – Denotes Abec 5T for torque tube and extra thin series
- No symbol indicates SAE 52100 rings and balls

### Sizes & Series

- R\_B** – Inch series instrument angular contact bearing with separable relieved inner ring
- R\_H** – Inch series instrument angular contact bearing with non separable relieved outer ring
- 30B or H** – Metric series spindle/turbine configurations as for R series above
- 100B** – Metric series spindle turbine bearing with separable relieved inner ring
- 100/200/300/1900 H** – Metric series spindle/turbine angular contact non separable relieved outer ring
- 100/200/300/1900 J** – Metric series spindle/turbine angular contact non separable relieved inner ring

### Cages

- B** – Reinforced phenolic, one piece, designed to retain the balls in the outer ring
- H** – Reinforced phenolic, one piece, halo design
- (H)JB** – Bronze machined halo light weight design for optimum capacity
- (H)JH** – Bronze machined halo, heavier section, centered on ball pitch diameter
- (J)JJ** – Bronze pressed halo with formed pockets

### Special Features

Letters 'X' or 'Y' followed by numbers indicate special features. Some of these are now 'standard' and appear in the bearing tables. Some commonly used are:

- X204** – Customer part number marked on bearing
- X205** – Full of Balls (no cage)

Consult Barden Engineering for details.

### Radial Play

Radial play in angular contact bearings is usually standardised by the design either:

- to achieve a desired contact angle
- or
- to achieve optimum performance under the typical combined load whilst still remaining assembled for handling and mounting operations

### Functional Test

Angular contact bearings are not normally subject to special low torque testing.

### Duplexing & Preloads

For duplex sets, letter symbol indicates type of mounting. If followed by number, numerals indicate mean preload in pounds. Absence of number indicates standard preload.

- D** – Universal mounting. Angular contact duplex sets universally ground have inner and outer rings of the same width, and can be installed DB, DF or DT. Standard Preloads are indicated by: **L** – Light, **M** – Medium and **H** – Heavy.

### Radial Runout

- E** – Special radial runout consult Barden
- R** – Inner ring marked for high point of radial runout
- R1** – Outer ring marked for high point of radial runout
- R2** – Both rings marked with high point of radial runout

### Calibration

Bearings are available with bore and O/D calibrated into steps of 0.0001", 0.00005" or 0.001mm.

- C** – Bore and O/D in 0.0001" (0.0025mm) steps
- C44** – Bore & O/D in 0.00005" (0.00125mm) steps
- O** – Is used when no calibration is required, i.e. **CXO** – bore only calibrated in 0.0001" steps

Groups may be combined, i.e.

- C4X** – Bore is calibrated in 0.00005" steps and O/D in 0.0001" steps
- CM** – Special metric calibration in 1 micron steps (0.001mm), inner ring bore only

For further information consult 'Calibration' in Engineering Section.

### Lubrication

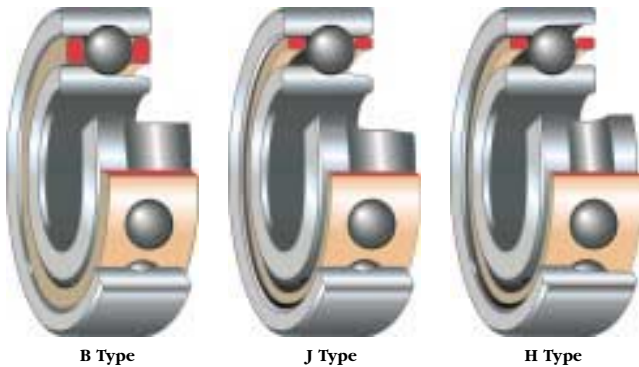
The pre-lubrication type is always indicated within the bearing number on the packaging.

- O** or **OJ** numbers denote oil
- G** or **GJ** numbers denote grease

Popular lubricants are listed within 'Lubrication' in the Engineering Section.

## ANGULAR CONTACT BEARINGS

### Product Series Descriptions



### Series R, R100, M and 30 Miniature and Instrument Bearings; Series 1900, 100, 200 and 300 Metric Ultra Light, Extra Light, Light and Medium Turbine Bearings

**Separable Type (B):** Outer ring has full shoulders, inner ring has one shoulder cut away. The inner ring is removable for mounting on the shaft separately from the outer ring assembly.

**Non-separable Type (H):** Inner ring has full shoulders, outer has one shoulder cut away with a small retaining lip at the edge of raceway.

**Non-separable Type (J):** Outer ring has full shoulders, inner ring has one shoulder cut away with a small retaining lip at the edge of raceway.

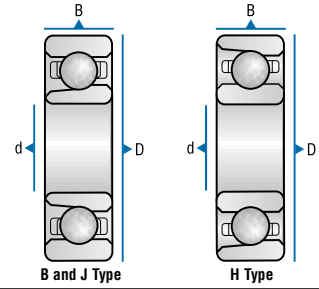
**Materials:** The standard material for angular contact bearings is SAE 52100 bearing steel for both rings and balls. With the option of using silicon nitride ceramic balls even higher speeds can be attained. Other materials available are AISI 440C corrosion resistant steel, Cronidur 30 high nitrogen steel and M50 tool steel.

**Lubricant:** Angular contact bearings can be supplied with a range of lubricants. Lubricant type should be specified when ordering based on application requirements.

For applications that cannot tolerate extreme fits, selective fitting with calibrated parts should be considered. See Engineering section for details.

# ANGULAR CONTACT (INCH)

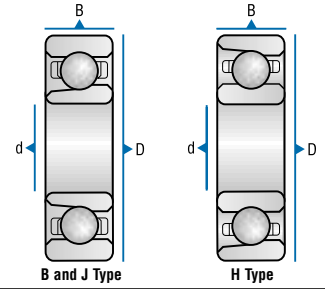
Bore Diameters: 2.380mm to 12.700mm



BASIC BEARING NUMBER	Bore Diameter d		Outside Diameter D		Width B		Maximum Shaft/Housing Radius Which Bearing Corner Will Clear r <sub>1</sub> Max.		Maximum Shaft/Housing Radius Which Bearing Corner Will Clear r <sub>2</sub> Max. Non-Thrust Side		Contact Angle	nd <sup>2</sup>
	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch		
R1-5B	2.380	0.0937	7.938	0.3125	2.779	0.1094	0.20	0.008	0.15	0.006	16°	0.0234
R1-5H	2.380	0.0937	7.938	0.3125	2.779	0.1094	0.20	0.008	0.15	0.006	12°	0.0273
R144H	3.175	0.1250	6.350	0.2500	2.779	0.1094	0.08	0.003	0.08	0.003	15°	0.0124
R2-5B	3.175	0.1250	7.938	0.3125	2.779	0.1094	0.08	0.003	0.08	0.003	20°	0.0273
R2-5H	3.175	0.1250	7.938	0.3125	2.779	0.1094	0.08	0.003	0.08	0.003	20°	0.0273
R2B	3.175	0.1250	9.525	0.3750	3.967	0.1562	0.30	0.012	0.15	0.006	15°	0.0273
R2H	3.175	0.1250	9.525	0.3750	3.967	0.1562	0.30	0.012	0.15	0.006	15°	0.0313
R2-6H	3.175	0.1250	9.525	0.3750	2.779	0.1094	0.15	0.006	0.15	0.006	15°	0.0273
R3B	4.762	0.1875	12.700	0.5000	3.967	0.1562	0.30	0.012	0.13	0.005	15°	0.0615
R3H	4.762	0.1875	12.700	0.5000	3.967	0.1562	0.30	0.012	0.13	0.005	10°	0.0615
R4B	6.350	0.2500	15.875	0.6250	4.978	0.1960	0.30	0.012	0.25	0.010	15°	0.0703
R4H	6.350	0.2500	15.875	0.6250	4.978	0.1960	0.30	0.012	0.25	0.010	10°	0.0791
R4HX8	6.350	0.2500	15.875	0.6250	4.978	0.1960	0.30	0.012	0.15	0.006	15°	0.1582
R8H	12.700	0.5000	28.575	1.1250	6.350	0.2500	0.41	0.016	0.20	0.008	17°	0.2930

# ANGULAR CONTACT (INCH)

Bore Diameters: 2.380mm to 12.700mm

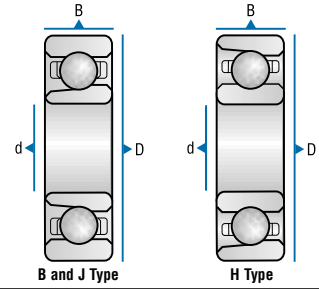


BASIC BEARING NUMBER	Static Capacity		Basic Dynamic Load Rating C (N)	BEARING NOMENCLATURE			ATTAINABLE SPEEDS (RPM)	
				B Type: Separable	J Type: Non-separable	H Type: Non-separable	Oil	Grease
R1-5B	53	89	254	R1-5B	–	–	267,000	214,000
R1-5H	62	89	285	–	–	R1-5H	267,000	214,000
R144H	31	89	169	–	–	R144H	315,000	268,000
R2-5B	67	125	280	R2-5B	–	–	244,000	195,000
R2-5H	67	93	285	–	–	R2-5H	244,000	195,000
R2B	67	107	289	R2B	–	–	202,000	162,000
R2H	111	133	400	–	–	R2H	202,000	162,000
R2-6H	71	133	356	–	–	R2-6H	202,000	162,000
R3B	151	240	605	R3B	–	–	152,000	122,000
R3H	151	231	676	–	–	R3H	152,000	122,000
R4B	191	307	689	R4B	–	–	116,000	93,000
R4H	218	289	756	–	–	R4H	116,000	93,000
R4HX8	916	1,810	2,313	–	–	R4HX8	130,000	100,000
R8H	2,073	1,308	3,981	–	–	R8H	57,000	47,000



# ANGULAR CONTACT (METRIC)

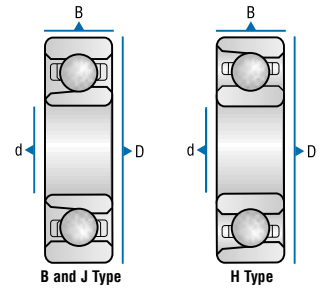
Bore Diameters: 3mm to 17mm






BASIC BEARING NUMBER	Bore Diameter d		Outside Diameter D		Width B		Maximum Shaft/Housing Radius Which Bearing Corner Will Clear r <sub>1</sub> Max.		Maximum Shaft/Housing Radius Which Bearing Corner Will Clear r <sub>2</sub> Max. Non-Thrust Side		Contact Angle	nd <sup>2</sup>
	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch		
2M3BY3	3.000	0.1181	10.000	0.3937	4.000	0.1575	0.15	0.006	0.15	0.006	20°	0.0273
34H	4.000	0.1575	16.000	0.6299	5.000	0.1969	0.30	0.012	0.13	0.005	12°	0.1250
34BX4	4.000	0.1575	16.000	0.6299	5.000	0.1969	0.30	0.012	0.13	0.005	15°	0.9380
34-5	5.000	0.1969	16.000	0.6299	5.000	0.1969	0.30	0.012	0.13	0.005	14°	0.9380
19M5BY1	5.000	0.1969	13.000	0.5118	4.000	0.1575	0.15	0.006	0.15	0.006	25°	0.4300
36H	6.000	0.2362	19.000	0.7480	6.000	0.2362	0.30	0.012	0.13	0.005	15°	0.1582
36BX1	6.000	0.2362	19.000	0.7480	6.000	0.2362	0.30	0.012	0.13	0.005	11°	0.1187
37H	7.000	0.2756	22.000	0.8661	7.000	0.2756	0.30	0.012	0.13	0.005	14°	0.2197
38H	8.000	0.3150	22.000	0.8661	7.000	0.2756	0.30	0.012	0.25	0.010	14°	0.2197
38BX2	8.000	0.3150	22.000	0.8661	7.000	0.2756	0.30	0.012	0.13	0.005	15°	0.1709
39H	9.000	0.3543	26.000	1.0236	8.000	0.3150	0.30	0.012	0.25	0.010	15°	0.3164
100H	10.000	0.3937	26.000	1.0236	8.000	0.3150	0.30	0.012	0.25	0.010	15°	0.3164
200H	10.000	0.3937	30.000	1.1811	9.000	0.3543	0.64	0.025	0.38	0.015	15°	0.4307
1901H	12.000	0.4724	24.000	0.9449	6.000	0.2362	0.30	0.012	0.15	0.006	15°	0.2686
101H	12.000	0.4724	28.000	1.1024	8.000	0.3150	0.30	0.012	0.25	0.010	15°	0.3516
101BX48	12.000	0.4724	28.000	1.1024	8.000	0.3150	0.30	0.012	0.25	0.010	15°	0.3516
201H	12.000	0.4724	32.000	1.2598	10.000	0.3937	0.64	0.025	0.38	0.015	15°	0.3867
301H	12.000	0.4724	37.000	1.4567	12.000	0.4724	1.00	0.040	0.50	0.020	15°	0.6350
1902H	15.000	0.5906	28.000	1.1024	7.000	0.2756	0.30	0.012	0.15	0.006	15°	0.3418
102H	15.000	0.5906	32.000	1.2598	9.000	0.3543	0.30	0.012	0.25	0.010	15°	0.3867
102BX48	15.000	0.5906	32.000	1.2598	9.000	0.3543	0.30	0.012	0.25	0.010	15°	0.3867
102BJX6	15.000	0.5906	32.000	1.2598	9.000	0.3543	0.30	0.012	0.25	0.010	15°	0.3515
202H	15.000	0.5906	35.000	1.3780	11.000	0.4331	0.64	0.025	0.38	0.015	15°	0.6250
302H	15.000	0.5906	42.000	1.6535	13.000	0.5118	1.00	0.040	0.50	0.020	15°	1.0635
103H	17.000	0.6693	35.000	1.3780	10.000	0.3937	0.30	0.012	0.25	0.010	15°	0.4570
103BX48	17.000	0.6693	35.000	1.3780	10.000	0.3937	0.30	0.012	0.25	0.010	15°	0.4570
203H	17.000	0.6693	40.000	1.5748	12.000	0.4724	0.64	0.025	0.38	0.015	15°	0.7056
303H	17.000	0.6693	47.000	1.8504	14.000	0.5512	1.00	0.040	0.50	0.020	15°	1.1816

# ANGULAR CONTACT (METRIC)

Bore Diameters: 3mm to 17mm



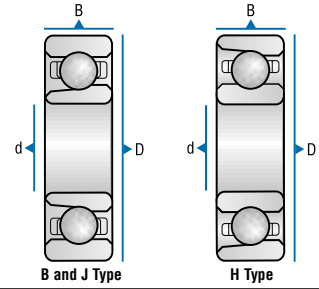
BASIC BEARING NUMBER	Static Capacity		Basic Dynamic Load Rating C (kN)	BEARING NOMENCLATURE			ATTAINABLE SPEEDS (RPM)	
	Radial C <sub>0</sub> (kN)	Thrust T <sub>0</sub> (kN)		 B Type: Separable	 J Type: Non-separable	 H Type: Non-separable	Oil	Grease
2M3BY3	0.07	0.11	0.29	2M3BY3	–	–	315,000	230,000
34H	0.48	0.52	1.45	–	–	34H	183,000	140,000
34BX4	0.15	0.18	0.72	34BX4	–	–	183,000	140,000
34-5	0.21	0.32	0.88	34-5B	–	34-5H	183,000	140,000
19M5BY1	0.12	0.25	0.47	19M5BY1	–	–	200,000	140,000
36H	0.64	0.77	1.86	–	–	36H(JB)	250,000	166,600
36BX1	0.20	0.24	0.93	36BX1	–	–	162,000	105,000
37H	0.92	1.35	2.48	–	–	37H(JB)	132,000	85,800
38H	0.92	1.35	2.48	–	–	38H(JH)	132,000	85,800
38BX2	0.43	0.62	1.53	38BX2	–	–	88,000	57,000
39H	1.33	2.60	3.44	–	–	39H(JB)	132,000	85,800
100H	2.37	2.70	5.33	–	–	100HJH	150,000	100,000
200H	4.06	3.23	6.97	–	–	200HJB	150,000	100,000
1901H	2.79	3.93	4.48	–	–	1901HJH	125,000	83,300
101H	2.77	3.12	5.82	–	–	101HJH	125,000	83,300
101BX48	2.32	3.46	4.58	101BX48	–	–	125,000	83,300
201H	3.78	5.13	5.95	–	–	201HJH	125,000	83,300
301H	5.62	8.85	9.91	–	–	301HJH	125,000	62,500
1902H	3.79	5.19	5.25	–	–	1902HJH	100,000	66,600
102H	4.13	4.30	6.24	–	–	102HJB	100,000	66,600
102BX48	2.70	3.91	4.96	102BX48	–	–	100,000	66,600
102BJJX6	2.76	5.25	5.88	–	102BJJX6	–	100,000	66,600
202H	6.09	4.85	9.67	–	–	202HJB	100,000	66,600
302H	9.47	14.50	15.30	–	–	302HJH	100,000	50,000
103H	3.94	3.87	6.97	–	–	103HJH	88,200	58,800
103BX48	3.30	5.78	5.56	103BX48	–	–	88,200	58,800
203H	7.09	10.47	10.91	–	–	203HJH	88,200	58,800
303H	11.15	16.60	16.91	–	–	303HJH	88,200	44,100

Tables continued on next page



# ANGULAR CONTACT (METRIC)

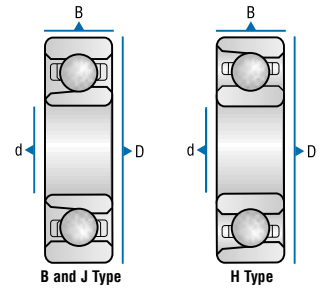
Bore Diameters: 20mm to 50mm






BASIC BEARING NUMBER	Bore Diameter d		Outside Diameter D		Width B		Maximum Shaft/Housing Radius Which Bearing Corner Will Clear r <sub>1</sub> Max.		Maximum Shaft/Housing Radius Which Bearing Corner Will Clear r <sub>2</sub> Max. Non-Thrust Side		Contact Angle	nd <sup>2</sup>
	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch		
104H	20.000	0.7874	42.000	1.6535	12.000	0.4724	0.64	0.025	0.38	0.015	15°	0.6875
104BX48	20.000	0.7874	42.000	1.6535	12.000	0.4724	0.64	0.025	0.38	0.015	15°	0.6875
204H	20.000	0.7874	47.000	1.8504	14.000	0.5512	1.00	0.040	0.50	0.020	15°	0.9766
304H	20.000	0.7874	52.000	2.0472	15.000	0.5906	1.00	0.040	0.50	0.020	15°	1.4854
1905H	25.000	0.9843	42.000	1.6535	9.000	0.3543	0.30	0.012	0.25	0.010	15°	0.7656
105H	25.000	0.9843	47.000	1.8504	12.000	0.4724	0.64	0.025	0.38	0.015	15°	0.8125
105BX48	25.000	0.9843	47.000	1.8504	12.000	0.4724	0.64	0.025	0.38	0.015	15°	0.8125
205H	25.000	0.9843	52.000	2.0472	15.000	0.5906	1.00	0.040	0.50	0.020	15°	1.0742
305H	25.000	0.9843	62.000	2.4409	17.000	0.6693	1.00	0.040	0.50	0.020	15°	2.1973
106H	30.000	1.1811	55.000	2.1654	13.000	0.5118	1.00	0.040	0.50	0.020	15°	1.1074
106BX48	30.000	1.1811	55.000	2.1654	13.000	0.5118	1.00	0.040	0.50	0.020	15°	1.1074
206H	30.000	1.1811	62.000	2.4409	16.000	0.6299	1.00	0.040	0.50	0.020	15°	1.8154
306H	30.000	1.1811	72.000	2.8346	19.000	0.7480	1.00	0.040	1.00	0.040	15°	2.8223
1907H	35.000	1.3780	55.000	2.1654	10.000	0.3937	0.64	0.025	0.38	0.015	15°	1.1875
107H	35.000	1.3780	62.000	2.4409	14.000	0.5512	1.00	0.040	0.50	0.020	15°	1.4648
107BX48	35.000	1.3780	62.000	2.4409	14.000	0.5512	1.00	0.040	0.50	0.020	15°	1.4648
207H	35.000	1.3780	72.000	2.8346	17.000	0.6693	1.00	0.040	0.50	0.020	15°	2.2969
307H	35.000	1.3780	80.000	3.1496	21.000	0.8268	1.50	0.060	0.76	0.030	15°	3.4805
108H	40.000	1.5748	68.000	2.6772	15.000	0.5906	1.00	0.040	0.50	0.020	15°	1.6602
108BX48	40.000	1.5748	68.000	2.6772	15.000	0.5906	1.00	0.040	0.50	0.020	15°	1.6602
208H	40.000	1.5748	80.000	3.1496	18.000	0.7087	1.00	0.040	0.50	0.020	15°	2.6367
308H	40.000	1.5748	90.000	3.5433	23.000	0.9055	1.50	0.060	0.76	0.030	15°	1.0742
109H	45.000	1.7717	75.000	2.9528	16.000	0.6299	1.00	0.040	0.50	0.020	15°	2.2500
209H	45.000	1.7717	85.000	3.3465	19.000	0.7480	1.00	0.040	0.50	0.020	15°	2.8564
309H	45.000	1.7717	100.000	3.9370	25.000	0.9843	1.50	0.060	0.76	0.030	15°	5.1992
110H	50.000	1.9685	80.000	3.1496	16.000	0.6299	1.00	0.040	0.50	0.020	15°	2.5313
110BX48	50.000	1.9685	80.000	3.1496	16.000	0.6299	1.00	0.040	0.50	0.020	15°	2.5313
210H	50.000	1.9685	90.000	3.5433	20.000	0.7874	1.00	0.040	0.50	0.020	15°	3.5000

# ANGULAR CONTACT (METRIC)

Bore Diameters: 20mm to 50mm

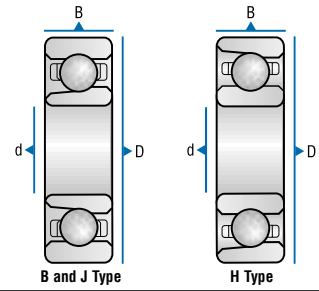


BASIC BEARING NUMBER	Static Capacity		Basic Dynamic Load Rating C (kN)	BEARING NOMENCLATURE			ATTAINABLE SPEEDS (RPM)	
							Oil	Grease
				B Type: Separable	J Type: Non-separable	H Type: Nonseparable		
104H	5.72	6.29	10.49	–	–	104HJH	75,000	50,000
104BX48	4.79	8.79	8.32	104BX48	–	–	75,000	50,000
204H	9.85	9.06	14.60	–	204JJJ	204HJH	75,000	50,000
304H	13.65	20.52	21.02	–	–	304HJB	75,000	37,500
1905H	8.69	11.85	10.48	–	–	1905HJH	60,000	40,000
105H	9.05	8.75	11.70	–	–	105HJH	60,000	40,000
105BX48	5.92	12.46	9.30	105BX48	–	–	60,000	40,000
205H	11.43	10.22	15.67	–	–	205HJB	60,000	40,000
305H	18.55	29.98	29.51	–	–	305HJB	60,000	30,000
106H	14.99	9.86	15.09	–	–	106HJH	50,000	33,300
106BX48	8.20	13.80	12.08	106BX48	–	–	50,000	33,300
206H	18.76	26.61	25.06	–	–	206HJH	50,000	33,300
306H	27.07	39.88	37.27	–	–	306HJH	50,000	25,000
1907H	14.04	18.80	14.67	–	–	1907HJH	42,800	28,500
107H	16.68	22.63	19.13	–	–	107HJB	42,800	28,500
107BX48	10.90	18.21	15.26	107BX48	–	–	42,800	28,500
207H	24.42	24.66	30.46	–	–	207HJH	42,800	28,500
307H	34.42	50.13	44.52	–	–	307HJH	42,800	21,400
108H	19.39	18.78	20.52	–	–	108HJH	37,500	25,000
108BX48	12.67	26.90	16.39	100BX48	–	–	37,500	25,000
208H	28.40	40.07	34.47	–	–	208HJH	37,500	25,000
308H	43.05	62.19	54.05	–	–	308HJH	37,500	18,800
109H	25.82	34.88	27.62	–	–	109HJH	33,300	22,200
209H	31.52	31.46	36.27	–	–	209HJB	33,300	22,200
309H	52.10	75.35	64.12	–	–	309HJH	33,300	16,700
110H	29.59	39.66	29.61	–	–	110HJH	30,000	20,000
110BX48	19.33	41.04	23.69	110BX48	–	–	30,000	20,000
210H	38.71	38.75	41.19	–	–	210HJH	30,000	20,000

Tables continued on next page

# ANGULAR CONTACT (METRIC)

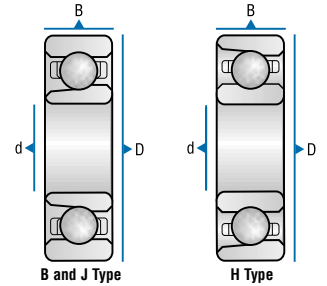
Bore Diameters: 50mm to 100mm






BASIC BEARING NUMBER	Bore Diameter d		Outside Diameter D		Width B		Maximum Shaft/Housing Radius Which Bearing Corner Will Clear r <sub>1</sub> Max.		Maximum Shaft/Housing Radius Which Bearing Corner Will Clear r <sub>2</sub> Max. Non-Thrust Side		Contact Angle	nd <sup>2</sup>
	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch		
310H	50.000	1.9685	110.000	4.3307	27.000	1.0630	2.00	0.080	1.00	0.040	15°	6.1875
211H	55.000	2.1654	100.000	3.9370	21.000	0.8268	1.50	0.060	0.76	0.030	15°	4.4297
212H	60.000	2.3622	110.000	4.3307	22.000	0.8661	1.50	0.060	0.76	0.030	15°	5.4688
312H	60.000	2.3622	130.000	5.1181	31.000	1.2205	2.00	0.080	1.00	0.040	15°	10.5000
113H	65.000	2.5591	100.000	3.9370	18.000	0.7087	1.00	0.040	0.50	0.020	15°	3.6367
113BX48	65.000	2.5591	100.000	3.9370	18.000	0.7087	1.00	0.040	0.50	0.020	15°	3.4453
214H	70.000	2.7559	125.000	4.9213	24.000	0.9449	1.50	0.060	0.76	0.030	15°	7.0898
115H	75.000	2.9528	115.000	4.5276	20.000	0.7874	1.00	0.040	0.50	0.020	15°	5.0000
117H	85.000	3.3465	130.000	5.1181	22.000	0.8661	1.00	0.040	0.50	0.020	15°	6.6445
117BX48	85.000	3.3465	130.000	5.1181	22.000	0.8661	1.00	0.040	0.50	0.020	15°	6.3281
118H	90.000	3.5433	140.000	5.5118	24.000	0.9449	1.50	0.060	0.76	0.030	15°	7.4219
220H	100.000	3.9370	180.000	7.0866	34.000	1.3386	2.00	0.080	1.00	0.040	15°	15.0000

## ANGULAR CONTACT (METRIC)

Bore Diameters: 50mm to 100mm



BASIC BEARING NUMBER	Static Capacity		Basic Dynamic Load Rating C (kN)	BEARING NOMENCLATURE			ATTAINABLE SPEEDS (RPM)	
							Oil	Grease
	B Type: Separable	J Type: Non-separable		H Type: Non-separable				
310H	62.31	89.55	75.11	-	-	310HJH	30,000	20,000
211H	48.71	67.25	52.96	-	-	211HJH	27,200	18,000
212H	60.04	60.34	64.05	-	-	212HJH	25,000	16,600
312H	87.77	132.05	105.28	-	-	312HJH	25,000	12,500
113H	43.32	47.35	40.05	-	-	113HJH	23,000	15,300
113BX48	26.79	57.05	30.96	113BX48	-	-	23,000	15,300
214H	78.73	108.09	79.38	-	-	214HJH	21,400	14,200
115H	59.65	79.41	52.66	-	-	115HJH	20,000	13,300
117H	79.33	105.14	67.20	-	-	117HJH	17,600	11,700
117BX48	49.35	105.16	52.09	117BX48	-	-	17,600	11,700
118H	87.95	117.80	76.40	-	-	118HJH	16,600	11,100
220H	166.01	229.28	155.92	-	-	220HJH	15,000	10,000